

## **REMARKS**

The Office Action dated November 19, 2004, has been received and carefully noted. The above amendments and the following remarks are submitted as a full and complete response thereto.

By this Amendment, claims 1, 2, 4 and 5 have been amended. New claim 6 has been added. No new matter is presented. The amendments to the claims can be found in at least the Figures and on page 2, lines 11-12 of the specification as originally filed. Claims 1-6 are pending and respectfully submitted for consideration.

The Applicants wish to thank the Examiner for indicating allowable subject matter in claim 3. Claim 3 was not rewritten in independent form as it depends from claim 1, which is allowable for the reasons submitted below.

Claims 2, 4 and 5 were rejected under 35 U.S.C. § 112, second paragraph, as being indefinite. The Applicants have amended claims 2, 4 and 5 responsive to the rejection. The Applicants submit that all claims are in compliance with U.S. patent practice.

Claims 1 and 2 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Sato et al. (U.S. Patent No. 6,155,895, "Sato") in view of Kunze et al. (U.S. Patent No. 6,595,164 B2, "Kunze") and Okada (U.S. Patent No. 5,497,734). Sato was cited for disclosing many of the claimed elements of the invention with the exception of "a pair of left and right cooling water passages branching from a cooling water passage for supplying cooling water from the cooling water pump to the cylinder block cooling water jacket are made to communicate with the cylinder head cooling water jacket via gasket faces of the cylinder block and the cylinder head". Kunze and Okada were cited for

curing this deficiency. The Applicants traverse the rejection and respectfully submit that the claims 1 and 2 recite subject matter that is neither disclosed nor suggested by the cited prior art.

As a result of the claimed invention, the water-cooled vertical engine has an arrangement in which the cylinder block cooling water jacket and the cylinder head cooling water jacket are substantially independent of each other. Owing to this arrangement, it is easy to set the temperature of the cylinder block and the temperature of the cylinder head independently at appropriate temperatures.

Furthermore, in the above-mentioned arrangement, cooling water is supplied to the cylinder head cooling water jacket by a specific arrangement wherein a pair of left and right cooling water passages branching from a cooling water passage for supplying cooling water from a cooling water pump to the cylinder block cooling water jacket communicates with the cylinder head cooling water jacket via gasket faces of the cylinder block and the cylinder head which are mating faces of the cylinder block and cylinder head. Therefore, the number of components can be reduced and space can be saved advantageously in comparison with a case in which cooling water is supplied to the cylinder head cooling water jacket via an external pipe. Moreover, since the pair of left and right cooling water passages is provided and communicates with the cylinder head cooling water jacket, the flow of cooling water within the cylinder head cooling water jacket can be made uniform and reliable, thereby enhancing the cooling effect.

Claim 1, as amended, recites “wherein the cylinder block cooling water jacket and the cylinder head cooling water jacket are substantially independent of each other.” In contrast, Sato does not disclose or suggest at least the claimed specific arrangement

of a substantially independent cylinder head and cylinder block cooling water jacket and associated cooling passage structure at the gasket faces. As such, Sato fails to disclose additional features of the claimed invention beyond those acknowledged in the Office Action.

Claim 1 also recites a pair of left and right cooling water passages branching from a cooling water passage for supplying cooling water from the cooling water pump to the cylinder block cooling water jacket is made to communicate with the cylinder head cooling water jacket via gasket faces of the cylinder block and the cylinder head. The Office Action took the position that Kunze shows a cooling system for an internal combustion engine and that Kunze demonstrates the equivalence of serial and parallel flow between the head jacket and the block jacket (Figs. 1-2). See paragraph 5 of the Office Action. However, the Applicants submit that Kunze does not disclose a pair of left and right cooling water passages branching from a cooling water passage for supplying cooling water from a cooling water pump to the cylinder block cooling water jacket. In contrast, Kunze discloses that "a coolant pump 12 conveys liquid coolant to cylinder head 10 and cylinder block 11, which enters both cylinder elements in parallel and flows through them longitudinally (i.e., in the direction of a row of cylinders) through coolant conduits." See column 3, lines 7-13 and Fig. 1 of Kunze. As shown in Figs. 1 and 2 of Kunze, only a single coolant line communicates with each of the cylinder head 10 and cylinder block 11. As such, Kunze does not disclose a pair of left and right cooling water passages branching from a cooling water passage for supplying cooling water from the cooling water pump to the cylinder block cooling water jacket.

As noted above, claim 1 recites “a pair of left and right cooling water passages. . . is made to communicate with the cylinder head cooling water jacket via gasket faces of the cylinder block and the cylinder head.” In contrast, the coolant line in Kunze does not convey liquid coolant to the cylinder head 10 through gasket faces. Accordingly, Kunze does not disclose or suggest at least a pair of left and right cooling water passages that is made to communicate with the cylinder head cooling water jacket via gasket faces of the cylinder block and cylinder head, as recited in claim 1.

Okada fails to cure the deficiencies in Sato and Kunze as Okada also does not disclose a pair of left and right cooling water passages that is made to communicate with the cylinder head cooling water jacket via gasket faces of the cylinder block and the cylinder head. In contrast, Okada discloses that the outlet of the water pump 23 is communicated through the bank center of the two banks 21 and 22 with respective inlet ports 27 and 28 of the left and right cylinder block water jackets 25 and 26. The outlet of the water pump 23 is also communicated through the bank center with respective inlet ports 33 and 34 of the left and right cylinder head water jackets 31 and 32. That is, the left water jackets 25 and 31 are arranged in parallel with the right water jackets 26 and 32, with respect to the outlet of the water pump 23. (Emphasis added). See column 5, lines 1-10 of Okada. As such, Okada fails to disclose or suggest that a pair of left and right cooling water passages branching from a cooling water passage for supplying cooling water from the cooling water pump to the cylinder block cooling water jacket are made to communicate with the cylinder head cooling water jacket via gasket faces of the cylinder block and the cylinder head. As such, Sato, Kunze and Okada, in

combination, fail to disclose or suggest the features of the invention as recited in claim 1.

Under U.S. patent practice, the PTO has the burden under §103 to establish a *prima facie* case of obviousness. In re Fine, 5 USPQ2d 1596, 1598 (Fed. Cir. 1988). Both the case law of the Federal Circuit and the PTO itself have made clear that where a modification must be made to the prior art to reject or invalidate a claim under §103, there must be a showing of proper motivation to do so. The mere fact that a prior art reference could arguably be modified to meet the claim is insufficient to establish obviousness. The PTO can satisfy this burden only by showing some objective teaching in the prior art or that knowledge generally available to one of ordinary skill in the art would lead that individual to combine the relevant teachings of the references. Id. In order to establish obviousness, there must be a suggestion or motivation in the reference to do so. See also In re Gordon, 221 USPQ 1125, 1127 (Fed. Cir. 1984) (prior art could not be turned upside down without motivation to do so); In re Rouffet, 149 F.3d 1350 (Fed. Cir. 1998); In re Dembiczak, 175 F.3d 994 (Fed. Cir. 1999); In re Lee, 277 F.3d 1338 (Fed. Cir. 2002). The Office Action restates the advantages of the present invention to justify the combination of references. There is, however, nothing in the applied references to evidence the desirability of these advantages in the disclosed structure.

As Sato, Kunze and Okada, in combination, do not disclose or suggest the features of the invention as recited in claim 1, the references do not support a *prima facie* case of obviousness of claim 1.

Claim 2 is dependant upon claim 1. Thus it is submitted that the references do not support a *prima facie* case of obviousness for at least the reasons set forth above with respect to claim 1.

Accordingly, as the combination of references fails to disclose or suggest each and every feature of the invention, the Applicants respectfully submit that claims 1-6 are allowable over the cited prior art. The Applicants therefore request withdrawal of the rejections, allowance of claims 1-6 and the prompt issuance of a Notice of Allowability.

Should the Examiner believe anything further is desirable in order to place this application in better condition for allowance, the Examiner is requested to contact the undersigned at the telephone number listed below.

In the event this paper is not considered to be timely filed, the Applicants respectfully petition for an appropriate extension of time. Any fees for such an extension, together with any additional fees that may be due with respect to this paper, may be charged to counsel's Deposit Account No. 01-2300, **referencing Attorney Dkt. No. 107348-00372.**

Respectfully submitted,



Rhonda L. Barton  
Attorney for Applicants  
Registration No. 47,271

**Customer No. 004372**

ARENT FOX PLLC

1050 Connecticut Avenue, N.W., Suite 400

Washington, D.C. 20036-5339

Tel: (202) 857-6000

Fax: (202) 638-4810

RLB/elz

Enclosure: Petition for Extension of Time (two-months)